

Useful knowledge base (kb) tools

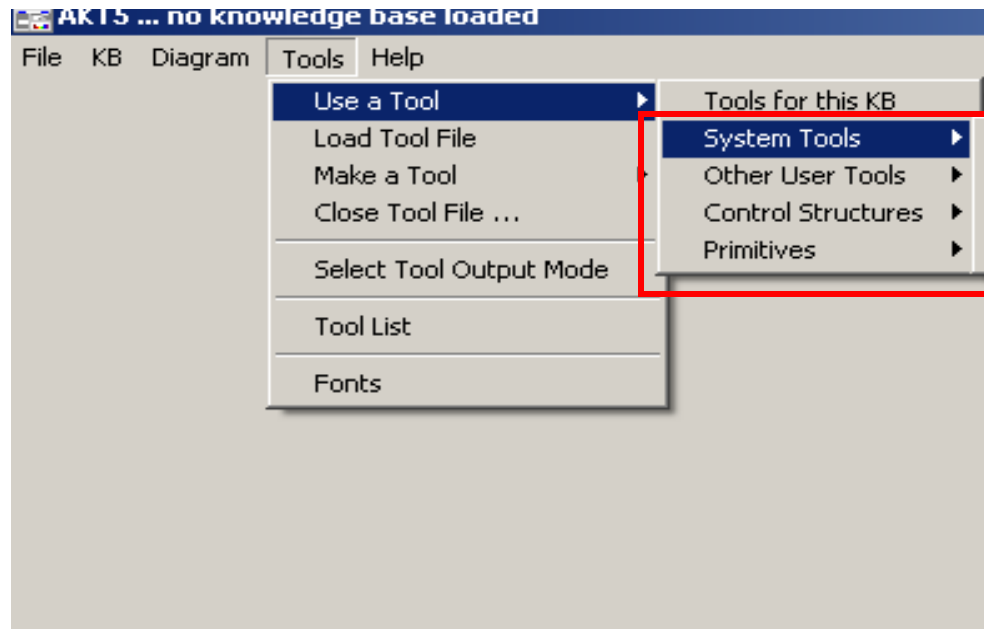
Deleting redundancies, KB reports and
checking for inconsistencies

An introduction to AKT5 tools

- AKT5 tools are like macros
- They can help you perform a repetitive task more quickly e.g.
 - 'Knowledge_base_report' can tell you how many statements of different types there are in the kb.
 - 'Source_consistency' produces a list of the kb female and male sources
- Some tools can do things that cannot be done in other ways
 - There is a tool that 'translates' a knowledge base by transposing formal terms and synonyms (e.g. to partially translate a kb into another language)
 - There is a tool for merging kbs
- Tools can be written (like macros) by the AKT5 user. However as there are already many useful tools in existence you don't need to do this.

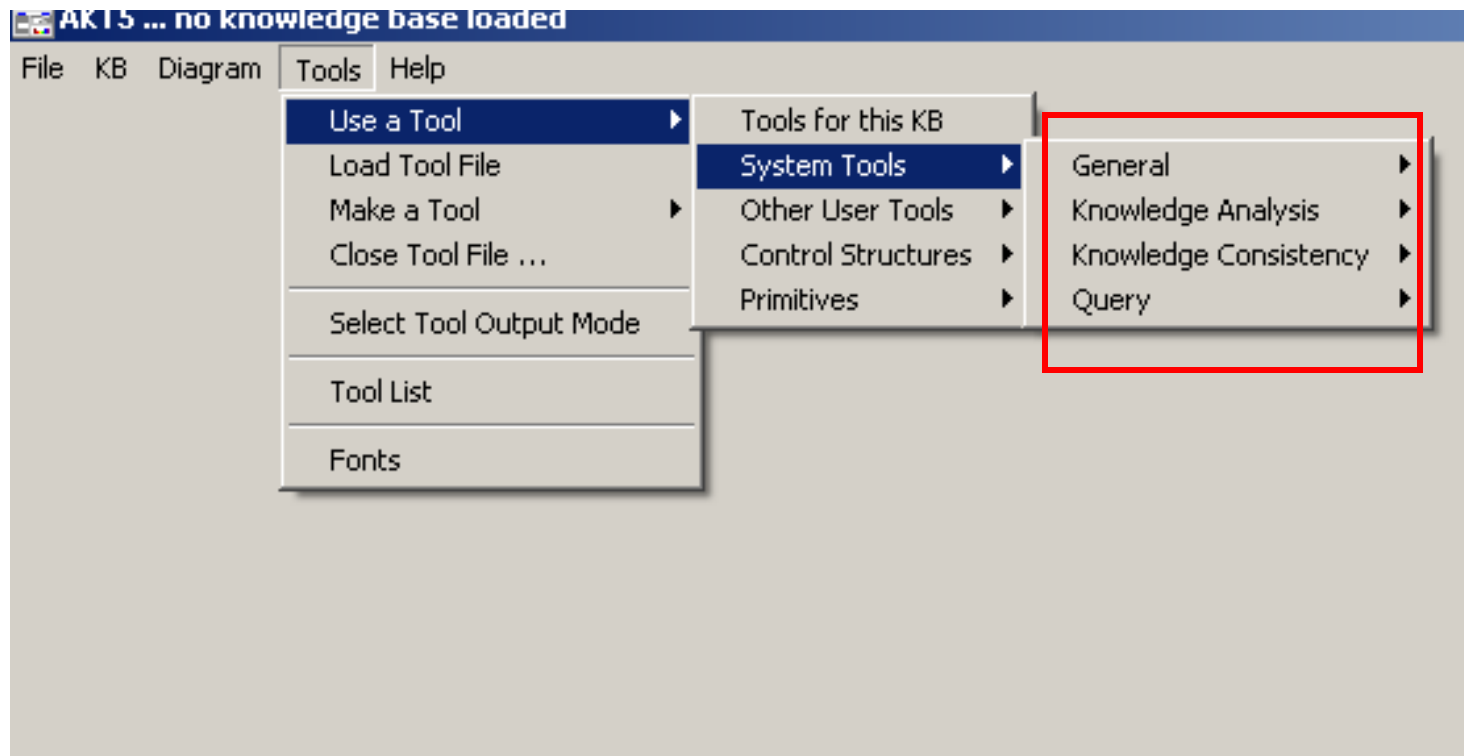
Types of tools

- Tools are found under the Tools menu
- There are 4 types of tools:
 - System Tools
 - Other User Tools
 - Control Structures
 - Primitives
- Primitives and Control Structures are used to create new tools
- We are only interested in **System tools**



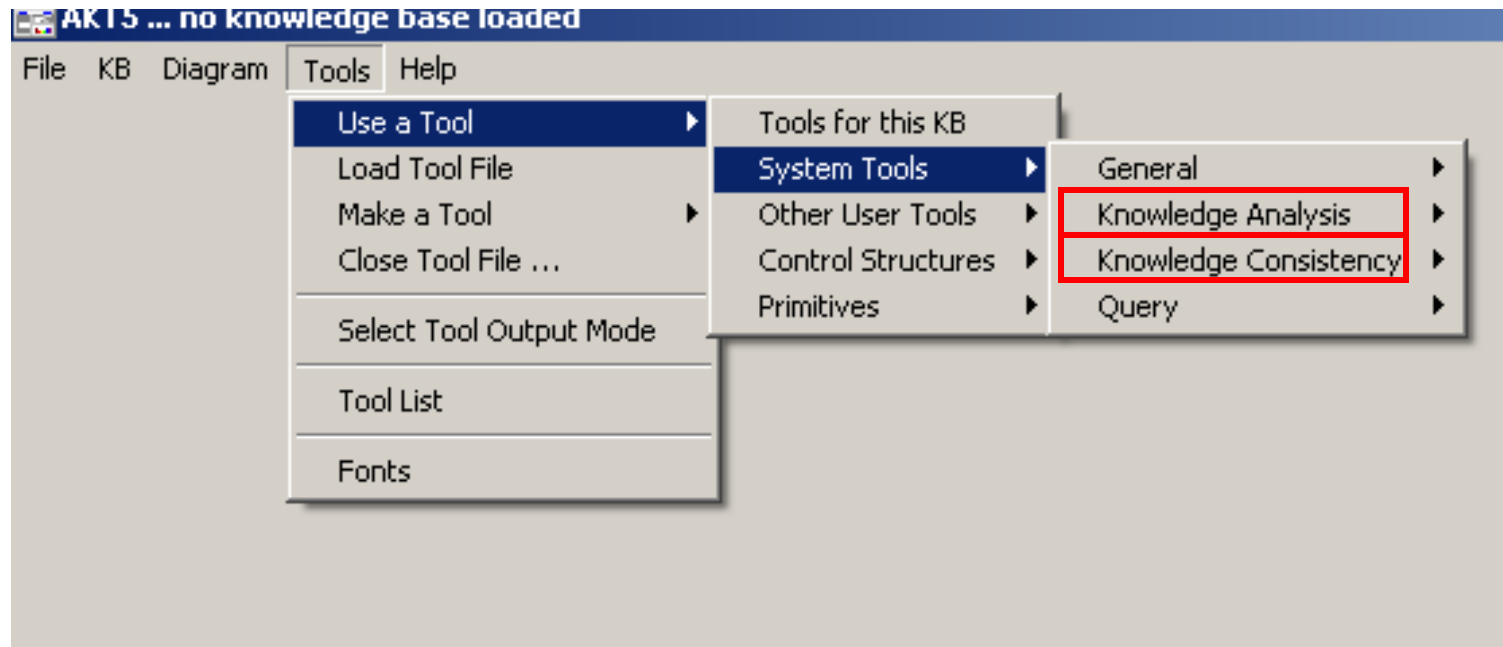
The main useful tools (1)

- The tools that you are most likely to find useful can be found under 'System Tools'
 - 'System Tools' come with the AKT5 program itself
 - They are grouped under 4 headings



The main useful tools (2)

- Out of the 4 'System Tools' the most useful for you will be the 'Knowledge Analysis' and 'Knowledge Consistency' tools.

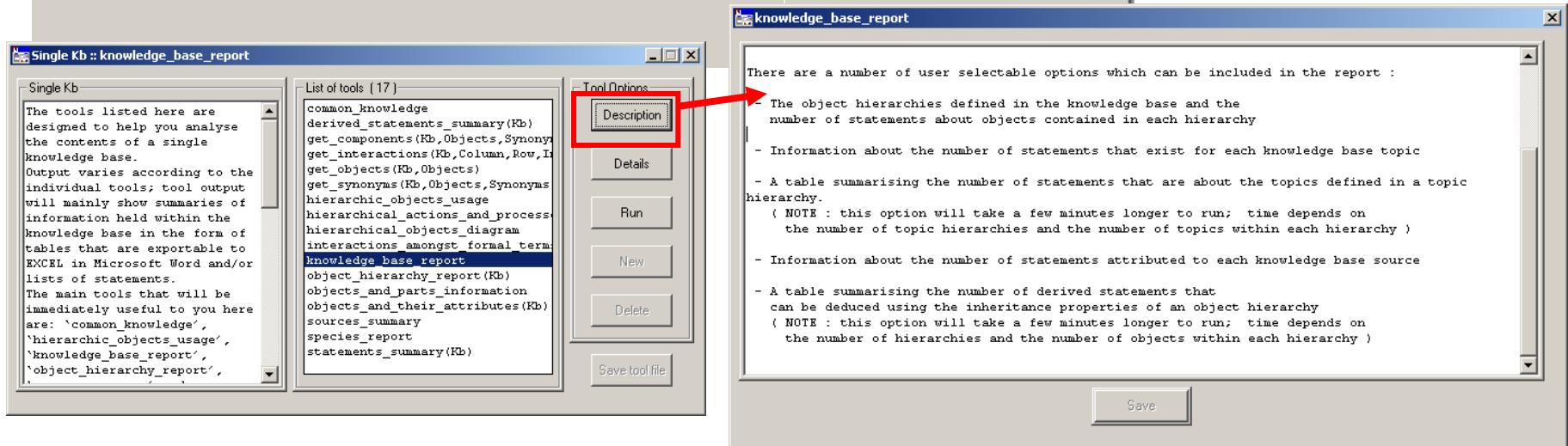
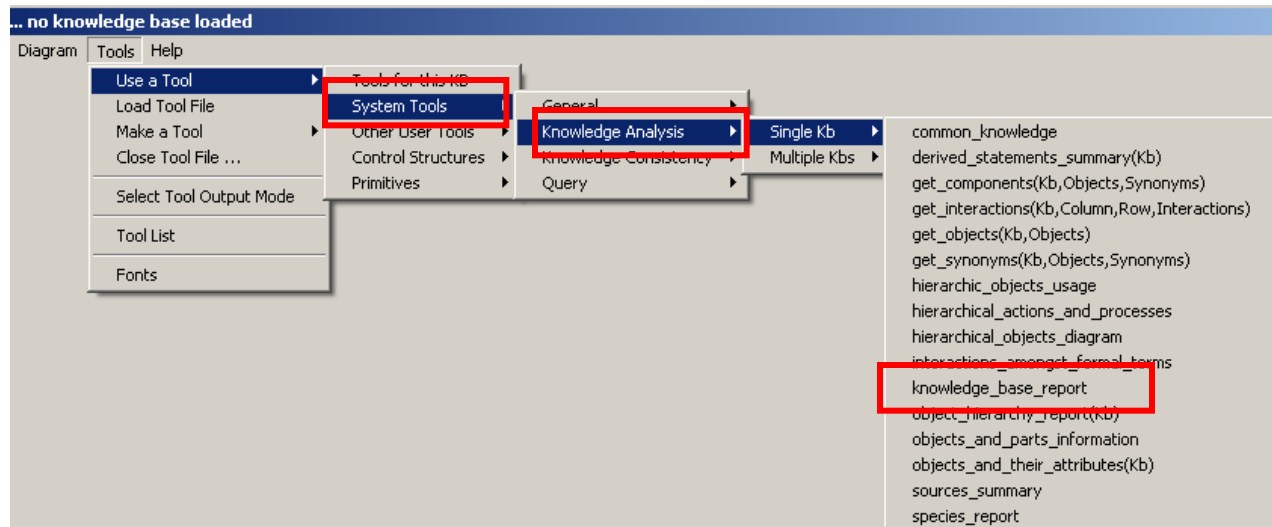


To use a Systems Tool (1)...

1. Locate the tool under the 'System Tools' menu.

2. Click on the tool you want to use.

3. Click on 'Description' for details of output.



To use a Systems Tool (2)...

- Click on 'Run' and select the relevant options, then press 'OK'
- You will then get a summary of what you asked for

The screenshot displays a software interface for analyzing a knowledge base. The main window, titled "Single Kb :: knowledge_base_report", contains a list of tools on the left, a description of the tools in the center, and a "Tool Options" panel on the right. The "Run" button in the "Tool Options" panel is highlighted with a red box. A "Choose options ..." dialog box is open, showing a list of optional items with "topic_hierarchies" selected and its "OK" button highlighted. A "Make a selection ..." dialog box is also open, showing a list of hierarchies with "all" selected and its "OK" button highlighted. The "Tool output - [knowledge_base_report/0]" window shows the results of the tool run, including a table of statement types and a list of formal terms.

Single Kb :: knowledge_base_report

Single Kb

The tools listed here are designed to help you analyse the contents of a single knowledge base. Output varies according to the individual tools; tool output will mainly show summaries of information held within the knowledge base in the form of tables that are exportable to EXCEL in Microsoft Word and/or lists of statements. The main tools that will be immediately useful to you here are: 'common_knowledge', 'hierarchic_objects_usage', 'knowledge_base_report', 'object_hierarchy_report', 'objects_and_parts_information', 'objects_and_their_attributes(Kb)', 'sources_summary', 'species_report', 'statements_summary(Kb)'. 'knowledge_base_report' is selected.

List of tools (17)

- common_knowledge
- derived_statements_summary(Kb)
- get_components(Kb, Objects, Synonyms)
- get_interactions(Kb, Column, Row, I)
- get_objects(Kb, Objects)
- get_synonyms(Kb, Objects, Synonyms)
- hierarchic_objects_usage
- hierarchical_actions_and_processes
- hierarchical_objects_diagram
- interactions_amongst_formal_terms
- knowledge_base_report
- object_hierarchy_report(Kb)
- objects_and_parts_information
- objects_and_their_attributes(Kb)
- sources_summary
- species_report
- statements_summary(Kb)

Tool Options

- Description
- Details
- Run
- New
- Delete
- Save tool file

Choose options ...

Choose optional items: some may take a few minutes to run with

- ☒ derived_statements
- ☒ derivations
- ☒ object_hierarchies
- ☒ sources
- ☒ topic_hierarchies
- ☐ topic_statements

OK

Make a selection ...

Choose a hierarchy

- all
- all_trees
- animals
- animals_that_damage_coffee
- birds
- birds_eating_harmful_worms
- birds_eating_worms
- caliente_trees
- coffee_plants
- crops_with_coffee
- cuje_trees
- deciduous_trees

OK

Cancel

Tool output - [knowledge_base_report/0]

Currently selected Kb : cafnet_guatemala

Output

Results for knowledge_base_report/0 (9/11/2009 16:24:46)

Number of statements of each type used in the 'cafnet_guatemala' knowledge base.

TYPE	Number of statements	Conditions attached
all	654	136
attribute	41	7
causal	576	126
comparison	12	0
link	25	3

Node with most causal links in the 'cafnet_guatemala' knowledge base is 'act_value(soil,moisture_level,increase)' with 23 occurrences.

Formal term usage within the 'cafnet_guatemala' knowledge base.

Type	Number of formal terms
all	566
action	14
attribute	73
comparison	2
link	5
object	284
process	80
value	108

**** 594 synonyms are used in the 'cafnet_guatemala' knowledge base ****

Number of statements about the objects within the 'all_trees' hierarchy.

Object	Object statements	Subobjects statements
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Deleting redundant terms and sources

- If you alter the statements in your kb there could end up being formal terms and sources that are no longer in use but still present in the kb, these are called:

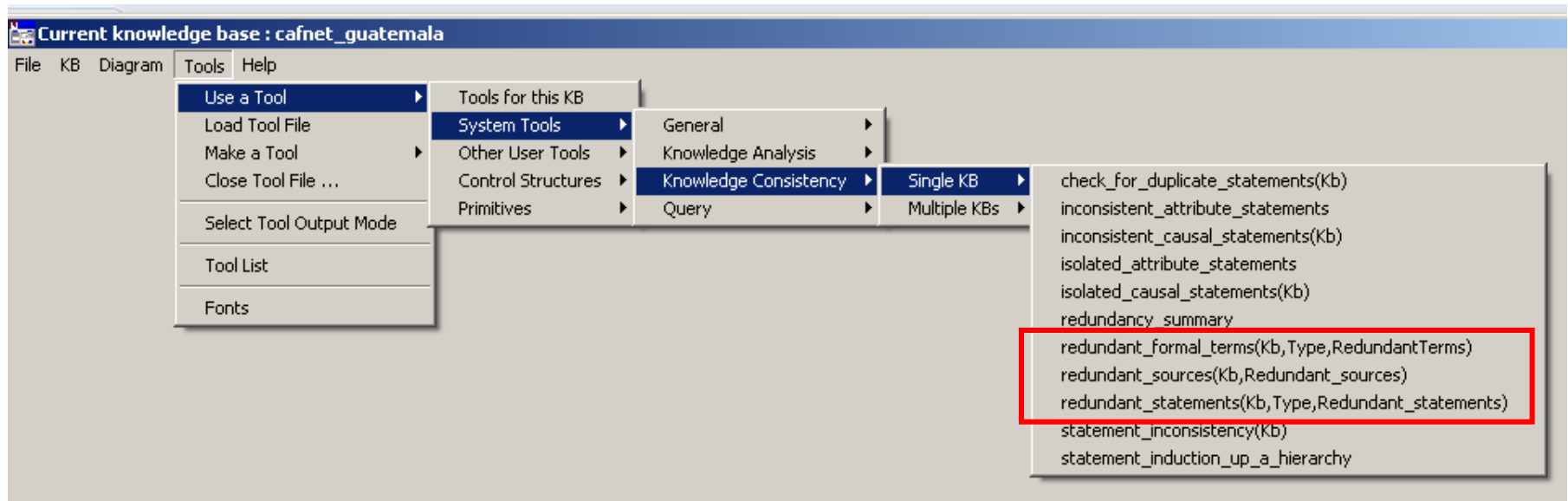
- 'redundant formal terms'
- 'redundant sources'

They can be found under System Tools > Knowledge Consistency Tools > Single KB

- It is important to run the tools available to make sure formal terms are up to date and sources are attached to statements.

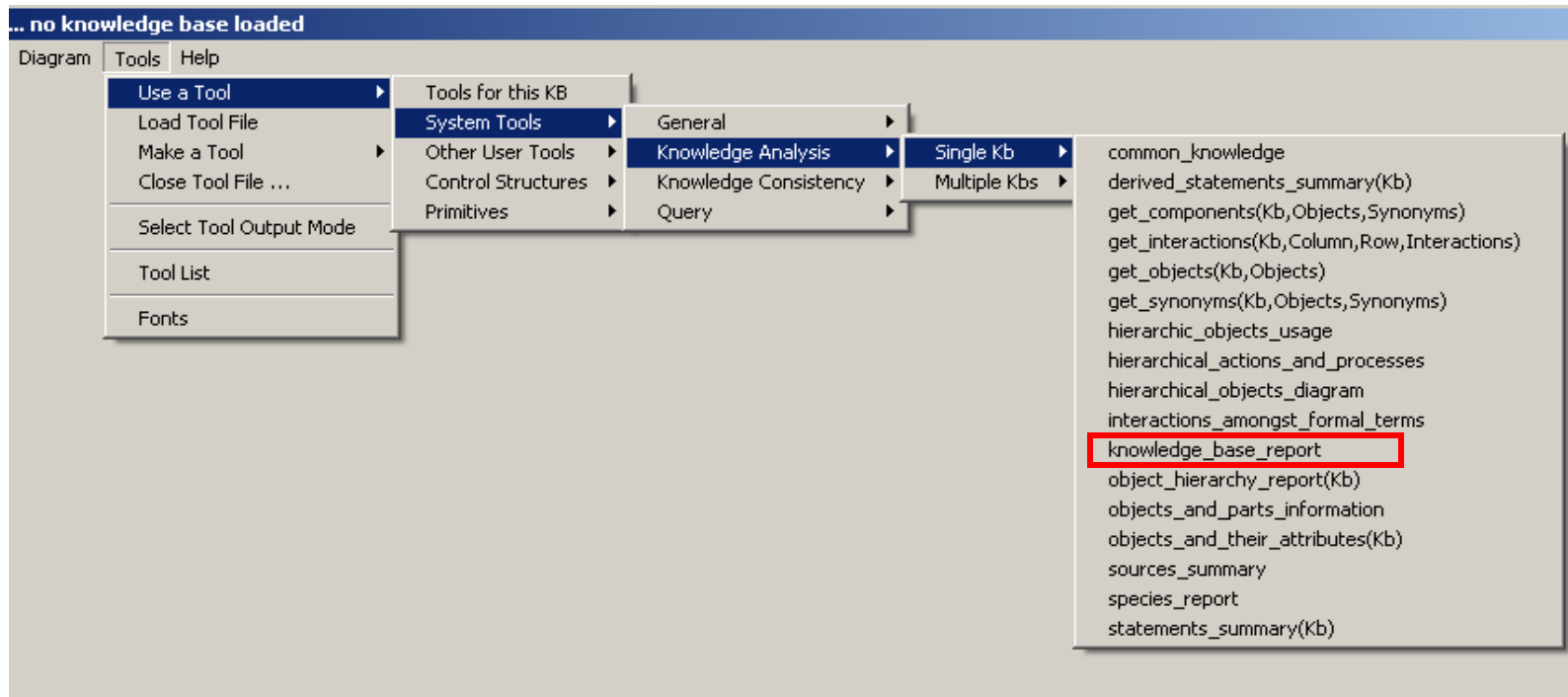
Running the redundancy tools

- The tools for checking for redundant formal terms, sources and statements can be found under 'Knowledge Consistency' in the 'System Tools' menu



Using the KB report tool (1)

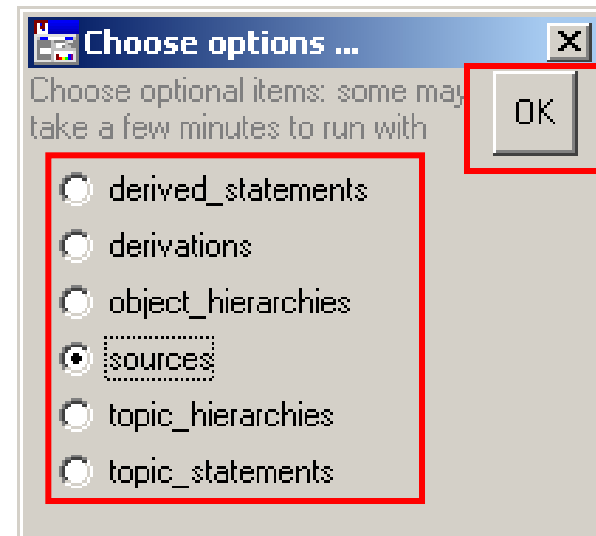
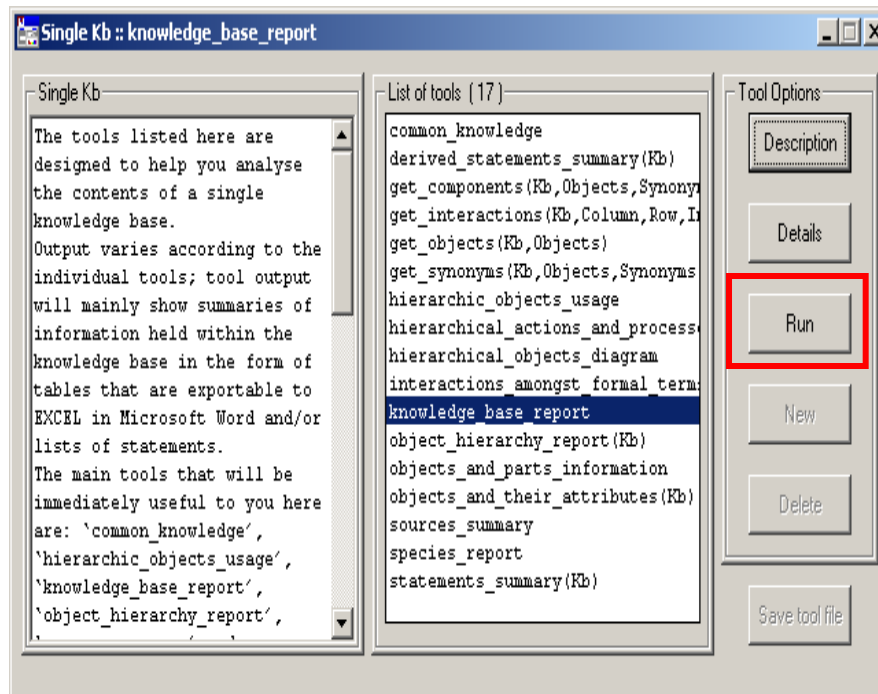
The 'Knowledge_base_report' tool summarises the information available in your kb



It is a useful analysis tool for checking source information, object and topic hierarchies and statement derivations.

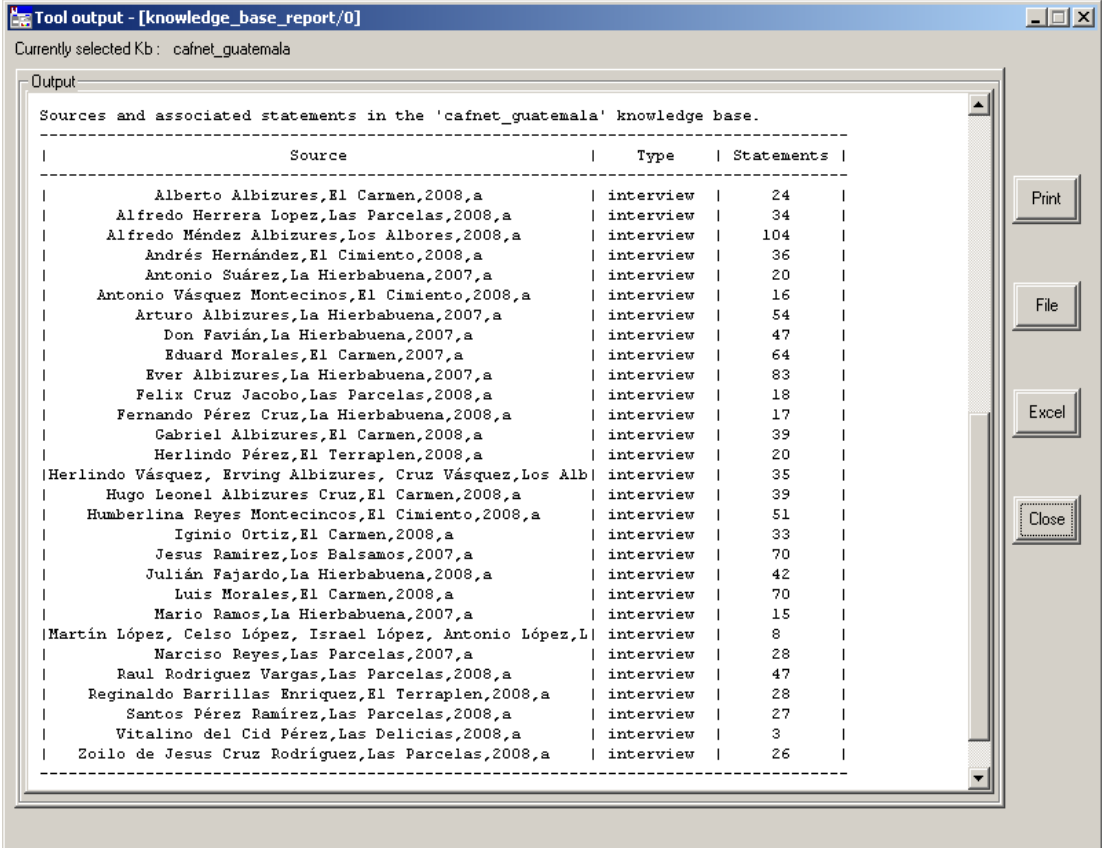
Using the KB report tool (2)

After selecting the 'knowledge_base_report' tool, click on 'run' and choose from the list of search options, then click on 'OK'



Using the KB report tool (3)

- This tool gives output that can show:
 - ❑ the number of different types of statement and formal terms
 - ❑ the amount of statements attached to each topic/object hierarchy
 - ❑ the number of synonyms used
 - ❑ the number of sources and their locations



Tool output - [knowledge_base_report/0]
Currently selected Kb: cafnet_guatemala

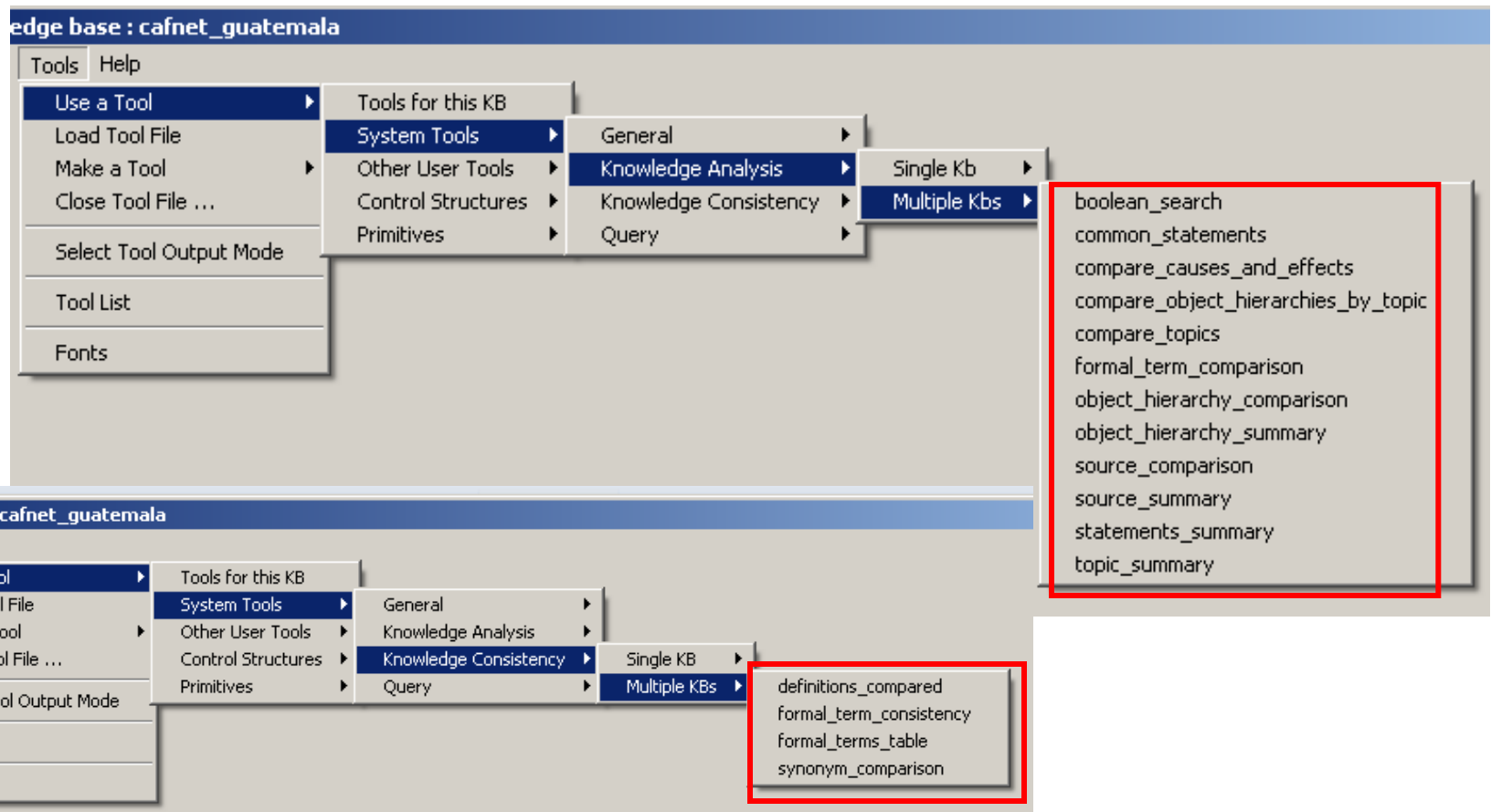
Output

Sources and associated statements in the 'cafnet_guatemala' knowledge base.

Source	Type	Statements
Alberto Albizures, El Carmen, 2008, a	interview	24
Alfredo Herrera Lopez, Las Parcelas, 2008, a	interview	34
Alfredo Méndez Albizures, Los Albores, 2008, a	interview	104
Andrés Hernández, El Cimiento, 2008, a	interview	36
Antonio Suárez, La Hierbabuena, 2007, a	interview	20
Antonio Vázquez Montecinos, El Cimiento, 2008, a	interview	16
Arturo Albizures, La Hierbabuena, 2007, a	interview	54
Don Favián, La Hierbabuena, 2007, a	interview	47
Eduard Morales, El Carmen, 2007, a	interview	64
Ever Albizures, La Hierbabuena, 2007, a	interview	83
Felix Cruz Jacobo, Las Parcelas, 2008, a	interview	18
Fernando Pérez Cruz, La Hierbabuena, 2008, a	interview	17
Gabriel Albizures, El Carmen, 2008, a	interview	39
Herlindo Pérez, El Terraplen, 2008, a	interview	20
Herlindo Vázquez, Erving Albizures, Cruz Vázquez, Los Alb	interview	35
Hugo Leonel Albizures Cruz, El Carmen, 2008, a	interview	39
Humberlina Reyes Montecinos, El Cimiento, 2008, a	interview	51
Iginio Ortiz, El Carmen, 2008, a	interview	33
Jesus Ramirez, Los Balsamos, 2007, a	interview	70
Julián Fajardo, La Hierbabuena, 2008, a	interview	42
Luis Morales, El Carmen, 2008, a	interview	70
Mario Ramos, La Hierbabuena, 2007, a	interview	15
Martin López, Celso López, Israel López, Antonio López, L	interview	8
Narciso Reyes, Las Parcelas, 2007, a	interview	28
Raul Rodriguez Vargas, Las Parcelas, 2008, a	interview	47
Reginaldo Barrillas Enriquez, El Terraplen, 2008, a	interview	28
Santos Pérez Ramirez, Las Parcelas, 2008, a	interview	27
Vitalino del Cid Pérez, Las Delicias, 2008, a	interview	3
Zoilo de Jesus Cruz Rodriguez, Las Parcelas, 2008, a	interview	26

Comparative analysis tools (1)

- There are tools for analysing more than one KB at a time and these can be found in the 'Multiple Kbs' menu



Comparative analysis tools (2)

- These tools are very useful for checking for consistency between knowledge bases
- There are options for comparing synonyms, formal terms, sources, definition use, object hierarchies and topics
- If you are developing more than one KB at a time then you should be using these tools to make sure you're being consistent
 - The more consistent with formal term use you are, the easier it is to merge knowledge bases later on, if there is a need to do so
- **Remember:** all the knowledge bases that you want to compare need to be opened for the tools to work